Description

Railway bogie

The invention relates to a railway bogie comprising at least one hydraulic spring having a housing being required for a functionality of said hydraulic spring and an axlebox.

From UIC standard a bogie with helical springs is well known, whereby the axlebox suspension consists of helical springs in combination with friction damping. Thereby the springs rest on support arms integral with the lower part of the axlebox housing and are connected with the bogie frame using caps integral with the bogie frame for taking up the top of the springs.

US 2002-0089102 A1 discloses a hydraulic spring comprising a membrane. Therein it is also disclosed that said hydraulic spring is for use in rail vehicles especially as a primary spring.

Further the catalogue of the company ContiTech Luftfedersysteme GmbH in Hannover, Germany, "Air Spring Systems for Modern Rail Vehicles", printed and distributed in October 1998 discloses the use of hydraulic springs comprising a membrane in two-axle bogies.

One object of the present invention is to provide an improved railway bogie comprising at least an axlebox and a hydraulic spring, so that the railway bogie has a simplified build-up and is therewith cheaper to produce.

The object of the invention is achieved by the subject of claim 1. Preferable embodiments are described in the dependent claims.

According to claim 1 a railway bogie comprising at least one hydraulic spring having a housing being required for a operativeness of said hydraulic spring and an axlebox is characterized by the fact that at least a part of said axlebox forms at least a part of said housing.

By the fact that an anyway existing part of the axlebox is designed and used to form a part of the housing of the hydraulic spring the number of components is reduced in total so that a lower fault liability and a more favourable cost position can be achieved.

Further advantages, features and details of the invention are described with respect to one preferred embodiment of the invention with reference to the drawings wherein:

Figure 1 is a longitudinal cross section in the region of one wheel of a bogie and

Figure 2 is a sectional view along the line BB of Figure 1.

Figure 1 shows a longitudinal cross section in the region of one wheel 2 of a bogie of the so-called Y 25 type, whereby the cut is directed according to a plane being defined by the axes of rotational symmetry of a first and second hydraulic spring. The pictured section of the bogie comprises an axlebox 10 with a rolling bearing 4

mounted in a middle region of the axlebox 10. The rolling bearing 4 supports one end of one of the two axles of the bogie.

A base of the axlebox 10 is extended to the left and the right side forming a cup shaped region 12 at each of said sides. Each of said hydraulic springs comprises a spring element 20, which is attached to each of said cup shaped regions 12 of the axlebox 10. A metallic centrepiece 26 is located in the centre of each of the spring elements 20.

These two centrepieces 26 are attached to one bridging adapter 50. Therefore the centrepieces 26 and the bridging adapter 50 have bores for connecting the centrepieces 26 with the bridging adapter 50 via two bolts 52 pictured uncut in Figure 1 and 2. In other embodiments the bolts 52 can be integral parts of the centrepieces 26 or of the bridging adapter 50 or the centrepieces 26 can be connected to the bridging adapter 50 by any other connecting means.

The bridging adapter 50 is attached to a longeron of a frame 6 of the bogie, whereby this longeron extends in a longitudinal direction parallel to the rails and is pictured uncut in Figure 1. Preferably the bridging adapter 50 is connected to the bogie frame 6 by welding.

In the following just that left cup shaped region 12 in connection with the left spring element 20 is described in detail, because the same applies to the right cup shaped region 12 in connection with the right spring element 20. Therefore Figure 2 shows a sectional view along the line BB of Figure 1. The spring element 20 comprises sleeve shaped elastomeric elements 22 and intermediate sleeve shaped metallic elements 24 in an alternating succession, whereby the elastomeric and the metallic elements 22 and 24 are connected by way of vulcanisation. Also the centrepiece 26 is connected by way of vulcanisation to its adjacent elastomeric element 22.

The spring element 20 is secured to the respective cup shaped region 12 of the axlebox 10 via a sealing ring 42, which is attached to the axlebox 10 via screws 44. In other embodiments the spring element 20 also can be directly vulcanised to the cup shaped region 12. The spring elements 20 forms together with the respective cup shaped region 12 of the axlebox 10 a volume for a fluid 30 particularly a hydraulic fluid. This volume is at least partly filled with the fluid 30. The centrepiece 26 is prolonged into said volume forming a plunger shaped region 28. Thereby at least a disk shaped region at the end of the plunger shaped region 28 is dipped into the fluid 30, so that this arrangement fulfils the function of a damper. So the cup shaped region 12 of the axlebox 10 together with the respective spring element 20 and the fluid 30 form together the hydraulic spring.

In another embodiment of the invention a hydraulic spring can be used, e.g. according to the already cited US 2002-0089102 A1, comprising a membrane instead of the plunger shaped section 28 of the centrepiece 26, whereby the cup shaped region 12 of the axlebox 10 is then also one part of the housing of the hydraulic spring.

List of reference signs

2	wheel
4	rolling bearing
6	bogie frame
10	axlebox
12	cup shaped region
20	spring element
22	elastomeric element
24	metallic element
26	centrepiece
28	plunger shaped region
30	fluid
42	sealing ring
44	screw
50	bridging adapter
52	bolt